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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FISCHER-TROPSCH CATALYSTS

(57) Abstract: A catalyst for use in a Fischer-Tropsch synthesis reaction which comprises cobalt supported on alumina, in which: the catalyst average particle size is in the range 20 to 100 μm ; the specific surface area of the impregnated and calcined catalyst particles is greater than 80 m^2/g ; the average pore size of the impregnated and calcined catalyst is at least 90 \AA (9nm); and the pore volume of the impregnated and calcined catalyst is greater than 0.35 cm^3/g .

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INTERNATIONAL SEARCH REPORT

International Application No

PC 3 03/04873

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B01J35/10 B01J35/02 B01J23/75 C07C1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B01J C07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 736 326 A (SASTECH PTY LTD) 9 October 1996 (1996-10-09) cited in the application page 3, lines 13-31; figures 2,3; examples 60-65	1-57
A	US 6 075 062 A (CHAUMETTE PATRICK ET AL) 13 June 2000 (2000-06-13) example 10	1-57
A	WO 01/62381 A (LOK MARTIN CORNELIS ;ICI PLC (GB); BAILEY STEPHEN (GB); GRAY GAVIN) 30 August 2001 (2001-08-30) example 3	1-57
A	US 5 639 798 A (CARR NORMAN L ET AL) 17 June 1997 (1997-06-17) the whole document	1-57
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 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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 "E" earlier document but published on or after the international filing date
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 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the International search

5 March 2004

Date of mailing of the international search report

25.03.04

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INTERNATIONAL SEARCH REPORT

Inte	al Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 129 776 A (INST FRANCAIS DU PETROL ;ENITECNOLOGIE SPA (IT); ENI SPA (IT); AGI) 5 September 2001 (2001-09-05) the whole document -----	1-57
A	WO 00/20116 A (BERGE PETER JACOBUS VAN ;LOOSDRECHT JAN VAN DE (ZA); SIGWEBELA BUL) 13 April 2000 (2000-04-13) the whole document -----	1-57
P,A	WO 02/089978 A (SUD CHEMIE INC) 14 November 2002 (2002-11-14) the whole document -----	1-57

INTERNATIONAL SEARCH REPORT

national application No.
PCT/GB 03/04873

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-57

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-57

catalyst comprising cobalt on alumina and its use in
Fischer-Tropsch synthesis of hydrocarbons

2. claims: 58-63

catalyst support defined by particle size and pore size

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte... Application No

PC 03/04873

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0736326	A 09-10-1996	AT 203929 T AU 694010 B2 AU 5050096 A CA 2173515 A1 DE 69614294 D1 DE 69614294 T2 DK 736326 T3 EP 0736326 A1 ES 2160211 T3 GR 3036807 T3 NO 961387 A NZ 286309 A PT 736326 T RU 2165789 C2 US 5733839 A ZA 9602759 A		15-08-2001 09-07-1998 17-10-1996 08-10-1996 13-09-2001 07-02-2002 01-10-2001 09-10-1996 01-11-2001 31-01-2002 08-10-1996 19-12-1997 28-12-2001 27-04-2001 31-03-1998 07-10-1996
US 6075062	A 13-06-2000	IT MI971574 A1 CA 2264534 A1 DE 69802497 D1 DE 69802497 T2 EP 0935497 A1 JP 2001500430 T NO 990985 A CN 1107535 B WO 9901218 A1 ES 2164451 T3 ID 29207 A RU 2207188 C2		04-01-1999 14-01-1999 20-12-2001 16-05-2002 18-08-1999 16-01-2001 26-04-1999 07-05-2003 14-01-1999 16-02-2002 09-08-2001 27-06-2003
WO 0162381	A 30-08-2001	AU 3213401 A EP 1257358 A1 WO 0162381 A1 US 2003032684 A1		03-09-2001 20-11-2002 30-08-2001 13-02-2003
US 5639798	A 17-06-1997	US 5780381 A		14-07-1998
EP 1129776	A 05-09-2001	IT MI20000409 A1 CA 2337457 A1 CN 1316298 A EP 1129776 A1 ID 29553 A NO 20011008 A US 2003203981 A1 US 2001041750 A1 ZA 200101714 A		03-09-2001 02-09-2001 10-10-2001 05-09-2001 06-09-2001 03-09-2001 30-10-2003 15-11-2001 30-08-2001
WO 0020116	A 13-04-2000	AT 243561 T AU 747207 B2 AU 5756399 A BR 9915344 A CA 2346258 A1 CN 1322153 T CZ 20011201 A3 DE 69909112 D1 DE 69909112 T2 EP 1119411 A1 ES 2201768 T3		15-07-2003 09-05-2002 26-04-2000 09-10-2001 13-04-2000 14-11-2001 17-10-2001 31-07-2003 24-12-2003 01-08-2001 16-03-2004

INTERNATIONAL SEARCH REPORT
Information on patent family members

Intern PC	Application No 03/04873
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0020116	A	WO 0020116 A1	13-04-2000
		JP 2002526241 T	20-08-2002
		NO 20011699 A	05-06-2001
		NZ 510952 A	29-04-2003
		PL 347129 A1	25-03-2002
		RU 2223821 C2	20-02-2004
		US 2001051589 A1	13-12-2001
		ZA 200102782 A	26-08-2002
WO 02089978	A 14-11-2002	EP 1392432 A1	03-03-2004
		WO 02089978 A1	14-11-2002